DOCUMENT RESUME

ED 419 521 IR 019 143

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TITLE Jungle Quest: Adventures in Creating a HyperStudio Word Study Program.
PUB DATE 1998-00-00
NOTE 36p.; Master's Research Project, University of Virginia. Graphics in Attachment A and B may not reproduce clearly.
PUB TYPE Reports - Descriptive (141) -- Tests/Questionnaires (160)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Active Learning; Computer Assisted Instruction; *Computer Games; *Computer Software Development; *Educational Technology; Elementary Education; Instructional Materials; Learning Activities; Material Development; *Multimedia Materials; Vocabulary; *Vocabulary Development
IDENTIFIERS *HyperStudio

ABSTRACT

This paper describes the development, design, and implementation of an educational multimedia program. The program, "Jungle Quest," combined HyperStudio and word study in a game for classroom use. Methods for word study provide a carefully sequenced teaching of phonics, vocabulary, and spelling following children's natural stages of orthographic development. This paper discusses the rationale; research of existing educational software; planning the program; storyboarding; designing in HyperStudio; overcoming barriers; testing the program; and evaluation. Storyboards, sample cards, and the evaluation survey are appended. (AEF)

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ED 419 521

Adventures in Creating a HyperStudio Word Study Program

Jessica Ludwig
Lauren Green
University of Virginia, 1998

IR019143

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Introduction

Over the course of the 1998 Spring semester at the Curry School of Education, we embarked on a technology project which would fulfill our requirements for the EDIS 788 Field Project/ Thesis class. When we first met to brainstorm ideas, we discussed our reasons for deciding to engage in a technology-based project. First, we knew that as teachers we would be actively seeking educational software to integrate into our classroom curriculums. Second, we realized from our experience and the experience of others that finding appropriate software can be difficult. Based on this knowledge, we decided to create our own educational software.

In "The Development of Computer-Based Media: Is a Rainforest the Same Place as a Jungle?", Mary Mauldin (1996) discusses how creating software can seem like a rainforest at times, full of magic and promise. However, at other times it can be like a jungle lurking with danger. As we began our own adventure in software development we realized the truth behind this analogy. We journeyed through multiple phases while completing our project, including research, production, implementation and evaluation.

Rationale

We embarked on this adventure without asking ourselves too many questions. In designing our own software, we were not thinking of making money or becoming professionals. In fact, we were extremely aware of our amateur status and simply wondered if we could make a sort of blurry idea become clear-cut reality. Our idea married HyperStudio and word study in some type of game for classroom use. Over time, this idea evolved into Jungle Quest.

Using HyperStudio

HyperStudio seemed to be a logical choice when deciding on what program to use. Although neither of us had extensive experience with the program, we knew of its capabilities.

HyperStudio is the equivalent of an electronic stack of index cards that can be furnished with buttons that have a variety of actions. One action, for instance, allows the user to move from one card to any other card in the stack, thus providing the user with a sense of choice and control. In addition, HyperStudio allows the program creator significant freedom for design and use of clip-art.

We had seen HyperStudio's capabilities put to a use similar to that which we were considering. Notably, we read a paper written by Amy Schumacher and Wendy Edwards in 1997 titled "The Design and Implementation of a Hypermedia Math Program." This paper recorded the research and procedures used by the pair in developing a math program that was slightly similar to the word study program we were envisioning. After reading this paper and seeing the HyperStudio demonstration disk, we believed that we could learn enough about this program to create the word study game we had in mind.

Why Word Study?

We are defining word study in accordance with the 1996 book by Bear, Invernizzi, Templeton, and Johnston, Words Their Way. This book is being utilized in public school language arts programs throughout Virginia and other nearby states. In particular, Albemarle County has been in the midst of a large teacher-training initiative in an effort to bring Words Their Way word study into the schools. Methods for word study outlined in this text provide a carefully sequenced teaching of phonics, vocabulary, and spelling following children's natural stages of orthographic development. Students examine distinct features of words and then categorize and sort words according to these features.

A weekly word study schedule includes a progression of activities that require students to "recognize, recall, judge, and apply" their words (Bear et al., p. 79). **Recognizing** words begins with the teacher in a small group, direct instruction setting. Students are asked to recognize the patterns within a group of words. **Recall** requires students to examine their surroundings as they brainstorm words that fit the pattern(s) they've just learned. In **judgment** activities, students hunt

for words that have these features and work alone or in pairs to complete additional sorts. Unlike those listed in the first three steps, the **application** stage can incorporate a wide range of activities. All activities in this stage, however, urge students to apply what they've learned to create something new or to apply their knowledge of patterns to new words. Here, games can "provide opportunities for application in an enjoyable context" (p. 79). Many board and card games are suggested in Words Their Way, so we considered that a computer game adhering to the word study would be just as successful in allowing students to apply their weekly word study knowledge.

Knowing of the current (and relatively new) use of Words Their Way word study in schools, we felt that it would provide an excellent base for our program. In addition, we were familiar with the Words Their Way methods and knew them to be successful in teaching children spelling and phonics. Finally, from what we understood, no one had yet developed a computer program similar to that which we had in mind using Words Their Way methods. In an effort to ascertain what programs were already available for classroom use, we began to do some research.

Research

While this was not a formal research project, we found it necessary to investigate what types of educational software already exist. We hoped that by doing this we would discover if our product would have some degree of originality and if it would meet a perceived need in the classroom. We found that there are many educational software programs available which focus on reading instruction. Most of these software packages include word study as one component of a much larger program. For example, Reader Rabbit which has been touted as the "granddaddy" of reading programs engages participants in activities for vocabulary building, spelling, letter recognition and memory. The phonics portion of one level of the program has children building three-letter words in the word factory. By doing this the children focus on the individual sounds that letters make. Reader Rabbit has three levels of play which allows for flexibility and

variability. Another popular program called Kid Phonics 2 has students looking at word construction, silent letters and homonyms. Word Munchers Deluxe focuses on improving reading, grammar and vocabulary skills. Like Reader Rabbit, Word Munchers Deluxe has different levels of play. While this is not a comprehensive view of reading software, it provides a sampling of what is available. Finally, we found a program which specifically deals with the word study instruction of Words Their Way. Card Maker by Steve Taylor, an Albemarle County technology specialist, allows teachers to customize and print out word sorts for use in the classroom. Based on our research, we concluded that there are few programs which are directly based on Words Their Way word study. In this sense, our software was relatively original in that it would be tailored toward students' word study instruction and used by the students themselves.

As we researched, we also discovered that there is a place within classroom instruction for drill-and-practice software. Although some criticize this type of educational software, it continues to dominate the market. It has also been shown that the large, open-ended learning systems tend to be the least successful in educating children about reading and math (Shade, 1996). We felt that drill-and-practice software would best accommodate word study instruction. Our reasoning was based on the fact that word study involves word sorting exercises accompanied by activities which review skills. Our research was helpful in determining where Jungle Quest would fit in the scope of the educational software arena.

Production

Planning the Program

Soon after conducting our research, we began the production phase of the Jungle Quest project. Our first step was to decide on a character for our program. We discussed the implications of choosing a boy over a girl and vice-versa. We also wondered if our character should be a member of a minority group, or if we should have a diverse group of characters. We then thought about focusing on an ambiguous character, like an alien, in an effort to avoid the issue

of representation all together. However, this did not suit our purposes either, because we wanted to create an educational program with a realistic basis. We realized the importance of having a character with whom the majority of children playing our game could identify and finally decided that the children could best identify with themselves. Therefore, we decided to have no main character in Jungle Quest other than the person playing the game.

Our next action involved planning adventures and deciding on the format of our game. We thought about creating a "choose-your-own-adventure" program which would offer at least four different activities such as a sports game and a jungle maze. We sketched out our plans in the form of a storyboard and brought them to our computer instructor. When she reminded us of time limitations, we quickly downsized our plans, focusing on one-fourth of what we had originally thought we could accomplish. The resulting project, which would soon occupy a large portion of our time, was labeled "Jungle Quest: A Word Study Adventure". The students playing our game would move through a jungle searching for lost treasure, engaging in word study along the way.

Our next step involved a visit to the local library where we checked out books on the subject of jungles. We chose a geographic region, specifically the Amazon, in an attempt to be as authentic as possible. We then searched through books looking for pictures and information. The planning phase of production was helpful in solidifying our game plan and materials. While we discovered wonderful pictures of rainforests in library books, we also invested in a clip-art book to find graphics for our project. We specifically looked for animals and plants in the clip-art book which would be found in an Amazon rainforest. Fortunately, there were drawings of monkeys, ferns, parrots and snakes which were ideal for a rainforest.

While planning the integration of clip-art into our project, we also discussed incorporating words for word study. Because we were both placed in local third-grade classrooms as part of the Technology Infusion Project, we aimed our word study toward a typical third-grade level. Specifically, we chose the late Within-Word-Pattern stage of development for word study. Spellers in this stage study the patterns of long vowels and abstract vowels (Bear et al., 1996). The sequence of word study instruction for Within Word Pattern includes focusing on a specific

long vowel sound, engaging in sorts on that sound and examining the different spelling patterns for the vowel sound. A typical activity for Within-Word-Pattern students might involve an open sort of a long vowel. For example, students would arrange long "i" word cards into categories for Consonant Vowel Vowel (CVV) words like **tie**, Consonant Vowel Consonant silent e (CVCe) words such as **time**, -IGHT words like **night**, and so on. We felt that Within Word Pattern was an appropriate developmental range for third grade, and we had the assurance of our cooperating instructors that many students in their classrooms fit this word study level. With our clip-art and word study underway, we began planning the storyboard for Jungle Quest.

Storyboarding

In creating the storyboard, we attempted to accurately portray what we wanted our program to look like. This included detailed pencil-and-paper sketches of each card in our stack (See Attachment A). We made sure to draw clip-art and add words for word study as they would appear in the final product. On each card the students would study the vowel sound and pattern of a "key word". We distinguished this word from the other three words on the card by making it larger in size and by placing it on a black background. Students would then attempt to choose the other word on the card which had the exact same vowel sound and pattern as the key word. For example, if **light** was a key word, and it was compared to flip, might, and lie, **might** would be the correct answer. We hoped that the students would read all of the words as they appeared on the screen and make logical choices based on their comparisons of the words.

We decided that there would be four places in the jungle where students could look for treasure: the canopy, the cloud forest, the river, and the forest floor. Each area of the jungle would focus on different vowel sounds and patterns. For example, the canopy would have students investigating various patterns of long "o". The other parts of the jungle would focus on long "a", "e" and "i". We made clear notes as to where we would find specific clip-art, and we decided to use the images as part of our own hand-drawn art in HyperStudio. HyperStudio offers special tools which allow the user to draw and paint in a variety of shades and colors. We hoped that the

clip-art would compliment the artwork we could do using the HyperStudio tools. With our storyboard planned, we were ready to enter the designing phase of production.

Designing in HyperStudio

While working in HyperStudio, we attempted to stick as closely as possible to our original storyboard design (See Attachment B). We divided the work evenly and were pleasantly surprised that our artwork looked so similar. Hours each day of every week were spent designing cards in HyperStudio by incorporating graphics and words. We manipulated each piece of clip-art in some way by changing either its size, color or location to suit our project. In some cases, we completely redesigned the clip-art so that it no longer resembled its original form.

In the introduction to our game, we deemed it important to include thorough directions as well as an example of the word study. We tried to use appropriate language throughout our program that any third-grade student at the late Within-Word-Pattern stage of development could understand. Our storyboard contained arrows drawn in to show links, and as our program started to take shape we were able to connect our HyperStudio cards together.

Maneuvering the computer mouse, students would move through our game by pressing on words which matched the vowel sounds and patterns of the key words. If the students clicked on a correct answer, they would be linked, or connected to a card stating "Great job! Keep going..." However, clicking on an incorrect answer would connect the students to a card encouraging them to try again. We then designed a card that showed the sought-after treasure of OokaBooka. We planned on having this card appear in one place during each game, showing up at the end of one of the four stacks. We wanted to ensure that a student playing the game would complete the word study in at least one part of the jungle before finding the treasure. By randomizing the card so that the location changed each game, we felt that students would be motivated to play the game more than one time. However, this would be one of a few problems that surfaced during the production of Jungle Quest.

Overcoming Barriers

We faced various pitfalls during the creation of our educational software. One barrier which surfaced was that we were quickly running out of disk memory as our program grew. This was due to the fact that our graphics and clip-art consumed a great deal of memory. We solved this problem by investing in a Zip disk which was worth the $20 price tag. A second pitfall we encountered was not so easy to solve. Counting on a treasure card to appear randomly in our game, we became frustrated when we realized that we lacked the computer programming knowledge to allow us to randomize a card. Running out of time, we consulted our computer instructors who directed us to a program similar to HyperStudio called Oracle Media Objects.

Oracle actually has a few benefits over HyperStudio, however, it did not catch on in popularity as its counterpart did. The Oracle program will soon be discontinued, and it is difficult now to find it on many computers. For our purposes, though, Oracle was the answer because of its less complicated programming language. We devoted our efforts to transferring the HyperStudio program into Oracle. Once all of the cards were in the new program, we were able to achieve the randomizing effect we had hoped for. We were also able to streamline our system of "correct/incorrect" answer cards and add realistic jungle sounds from the Internet.

Realizing that we were quickly running out of time to test our software in the local schools, we prepared it for burning onto a CD. We chose to put our program on a CD for three reasons. First, our program was currently working on a Zip disk, but Zip drives are not common in schools and are somewhat expensive. Second, cheaper CD-Roms have just as much memory, and nearly every school computer (at least in Albemarle County) is equipped with a CD-Rom drive. Finally, the program is unchangeable once it is burned onto a CD.

We added the Oracle Media Objects program player to our CD so that computers without Oracle could still run the Jungle Quest game. Finally, we proudly created our first CDs, displaying "Jungle Quest: A Word Study Adventure" on their covers (See Attachment C).

Implementation

In keeping with the rest of our project, our implementation and testing was informal and somewhat limited. Having spent many weeks in development, we found that we had little time left to take the program into schools. The County's spring break and SOL testing severely limited our opportunities to monitor children as they used the program. However, we did manage to have 13 third graders and four high-level first graders try out the program and complete a survey (See Attachment D).

If we had more time, we would have attempted to create a more scientific survey and allowed a larger sampling of children to test the program. In addition, we would have made the surveys somewhat more anonymous, which may have helped students feel more comfortable in offering negative feedback. As it was, survey responses were overwhelmingly positive. Every child responded that they would like to use Jungle Quest again and would like it to be a regular part of their word study instruction. Fortunately, none of the children seemed to have problems reading the directions and background of the program.

In addition to the surveys, we interviewed some of the students who had the opportunity to test Jungle Quest. These interviews, taped at Woodbrook Elementary School with parents' permission, backed up the positive survey results. Children liked the graphics, the sounds, and thought the program was "very designed" and creative. They also liked finding the treasure. Some of the third graders, when interviewed, felt that the words were "too easy," and believed that the program as a whole was not as difficult as a word study sort. However, these students who were designated by their teacher as Within-Word-Pattern spellers actually seemed to be moving beyond that level. Children who were slightly newer to the Within-Word-Pattern stage did not appear to agree that the program was too easy.

Evaluation

At the time of writing this paper, Jungle Quest continues to be a work in progress. To make it entirely viable, we must consider issues of program expansion, copyright investigation, and further work with HyperStudio.

Returning to HyperStudio

Although our program is currently running successfully in Oracle Media Objects, our first goal is to find a person who is extremely familiar with HyperLogo, the programming language for HyperStudio, so that we can run Jungle Quest in that program. By doing this, we are bringing Jungle Quest back to a program that is widely used throughout the country's public schools. In addition, further knowledge of HyperLogo should allow us to randomize the treasure card and add an extremely important feature. In order to make the program really ideal for a classroom setting, teachers need to have the capability to change the words to match their students' varying word study levels. At the moment, we are unsure how to make this work, or even if it is possible in HyperStudio. Therefore, we need to locate a HyperLogo expert or contact Richard Wagner Publishing, Inc., the creators of HyperStudio.

Expansions

We would also like to expand Jungle Quest in two other ways. First, given the time and resources, we'd like to create longer, more varied adventures, like those we initially planned. In addition, we hope to bring more science into the program in an effort to make Jungle Quest truly interdisciplinary. We could build on the program as it stands, because we have already taken pains to create a nearly authentic Amazon jungle. These interdisciplinary improvements might include information about the animals and plants that appear in the stack, continuing to allow the user some choice in the information they seek.

Before continuing the creation of Jungle Quest, we wish to investigate the matter of copyright. For us, copyright is a complex issue. First, we used University resources to create our

program. Second, we borrowed sounds from a website as well as HyperStudio. Third, we based our program on theories developed in the book, Words Their Way and would need the author's consent to continue to do this. Thus far, we are fortunate to have had some positive feedback from Marcia Invernizzi, one of the authors. However, she agrees with the need for teachers to be able to change the words that appear in the program for Jungle Quest to be really tailored to Words Their Way word study.

Despite our interest in making changes, we are extremely pleased and proud of our program. While our progress through the "jungle" of software design has been slow, it has not been as dark and frightening as it might have been. When we make an effort to expand our program in ways discussed above, we may find that our progress is darker than ever. However, as Mauldin writes, "The allure of a finished computer-based multimedia product can mask the traps and snares encountered along the way," (Mauldin, p. 18). Although Jungle Quest isn't entirely finished, we are satisfied that it has an allure all its own.

References

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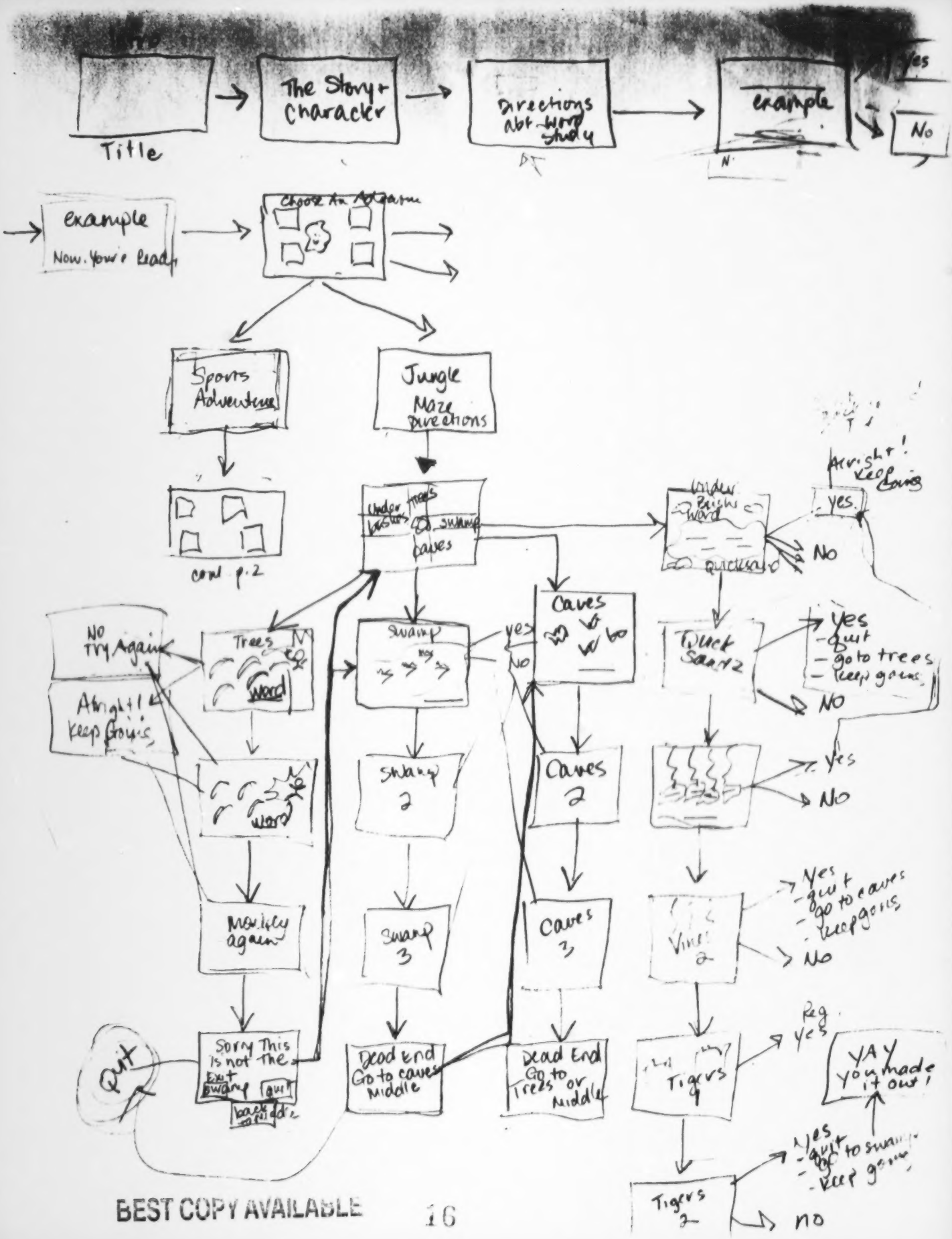
Maudlin, M. (1996). The development of computer-based multimedia: Is a rainforest the same place as a jungle? TechTrends, 41, 3, (April-May), 15-19.

Shade, D. D. (1996). Software evaluation. Young Children, 51, (September), 17-21.

The Parent's and Teacher's Guide to Software [on-line at http://www.superkids.com/aweb/pages/reviews/].

Attachment A
Storyboards



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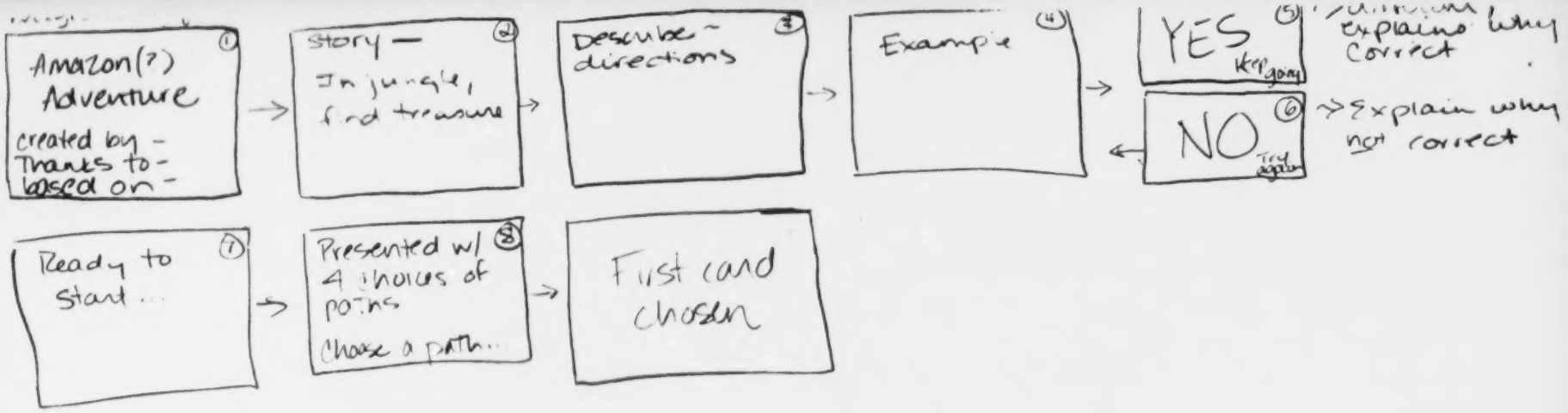

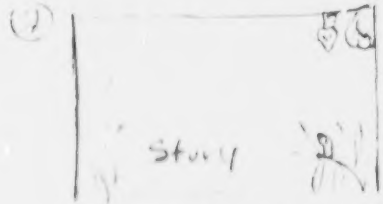

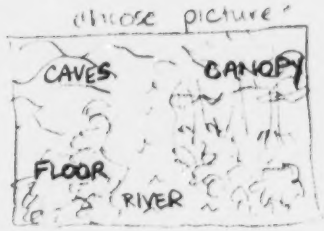

choose a path?

P.149 Chest

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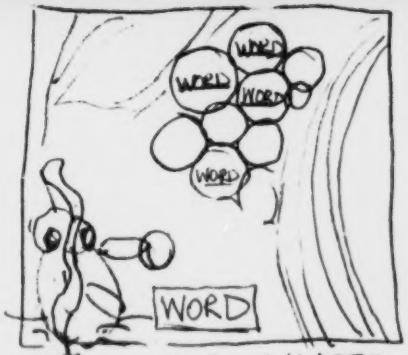
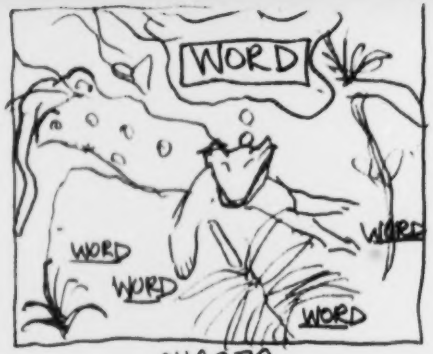


more monkeys? 2X? 04A073 monkey



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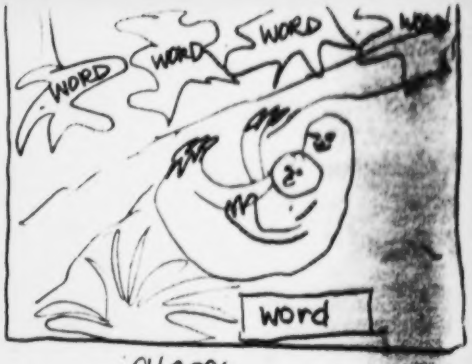

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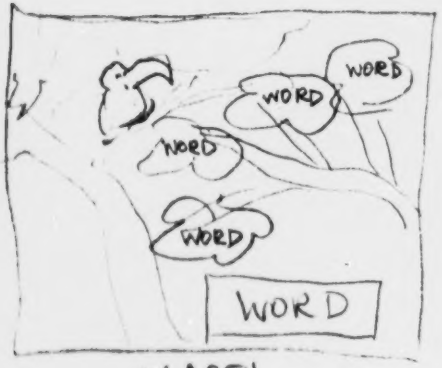

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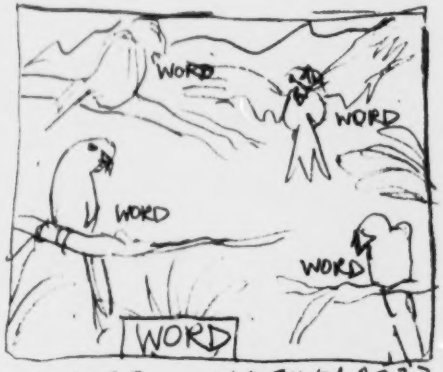

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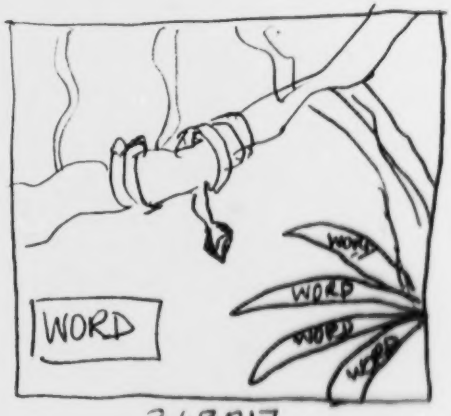

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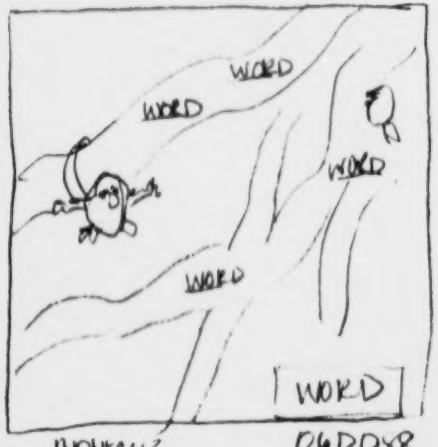
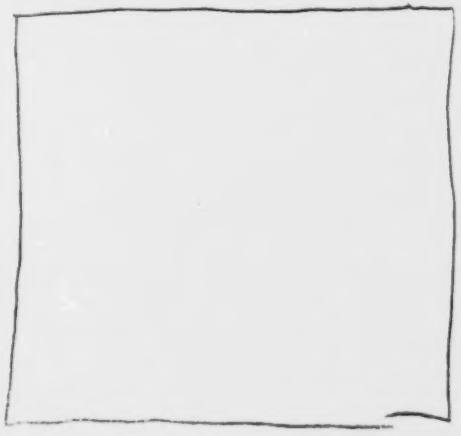


monkey? 06DD88 green parakeet

19



Pig Chicago 48
Plain
36 - new
~~road~~

20

(8)

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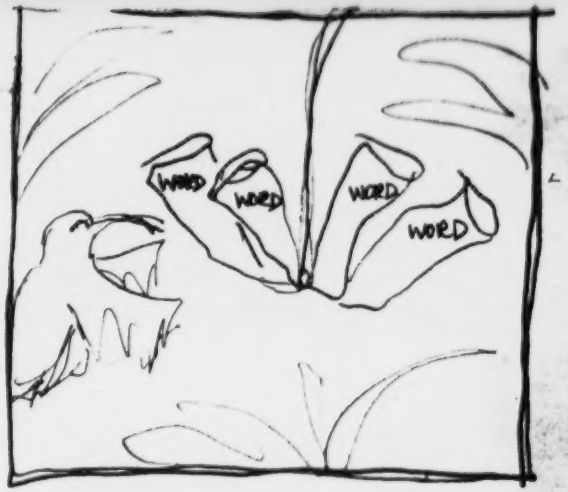
P. 153+154



lizard on tree branch 31B015

04A075 Mouse

opposum?

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(6)

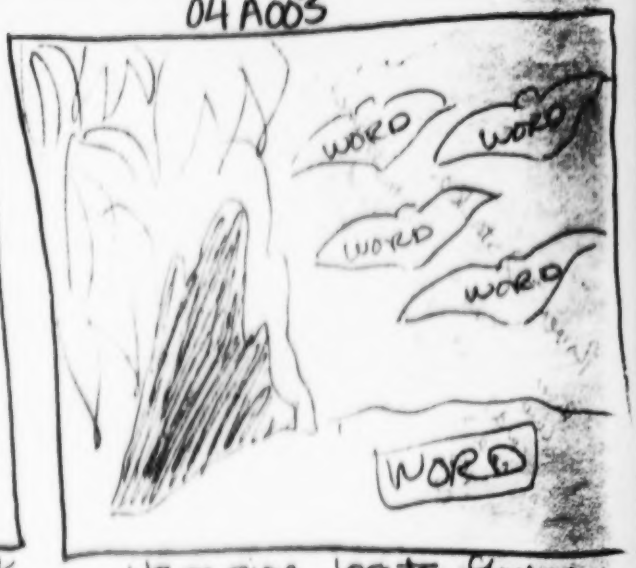
Mountains

Jaguar 04A060

Rocks on Slope

words in white/black background
yellow eyes

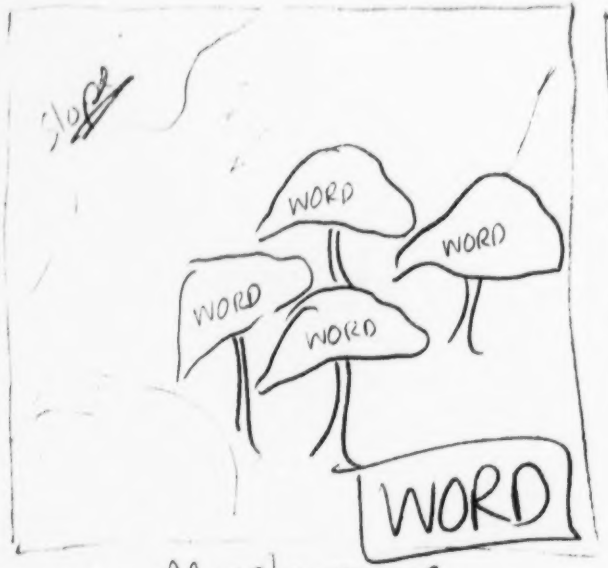
04A003



Vampire bats flying out

mnt Slope in background

leaf cutter ants



Mushrooms

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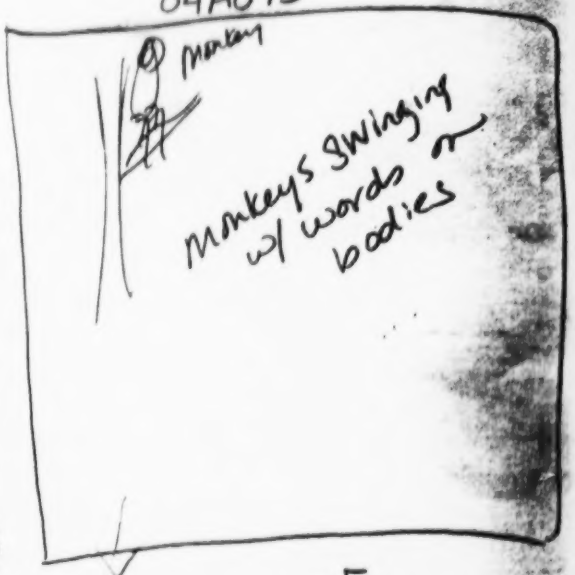

★Owls (?)

23

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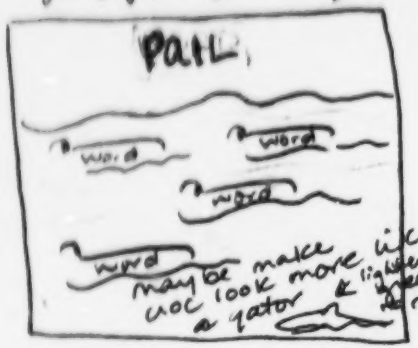
24

River

(Aerial view)



TAIL WHALE 285016 FAKE

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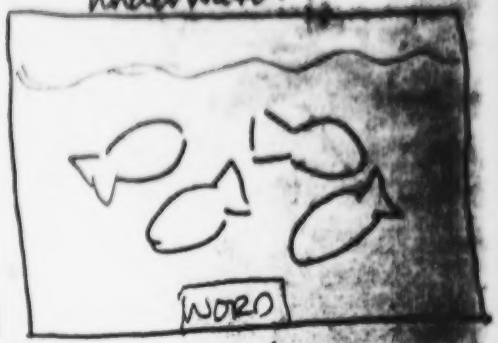
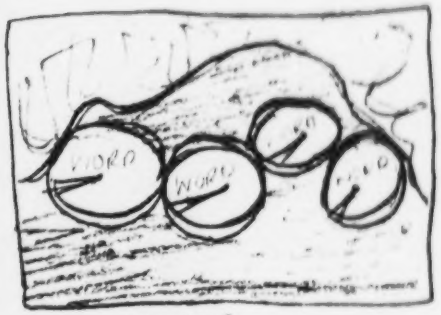


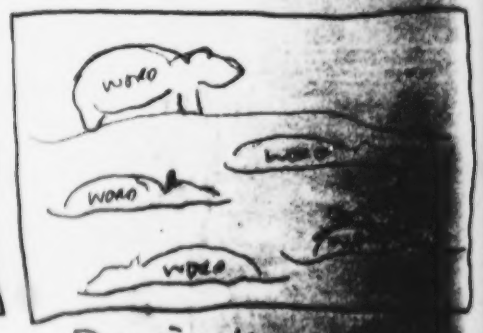
Piranhas



Water lilies
42L003

ORCHIDS
35C059 / 35C078
35C048

284003
Anaconda
AL00 :
36B017
(or hanging over water)



Pygmie hippo
04A0

Grab a branch!

Don't forget -
iguanas,
~~butterflies~~
lizards
tarantulas

Can use passion flower 35C049

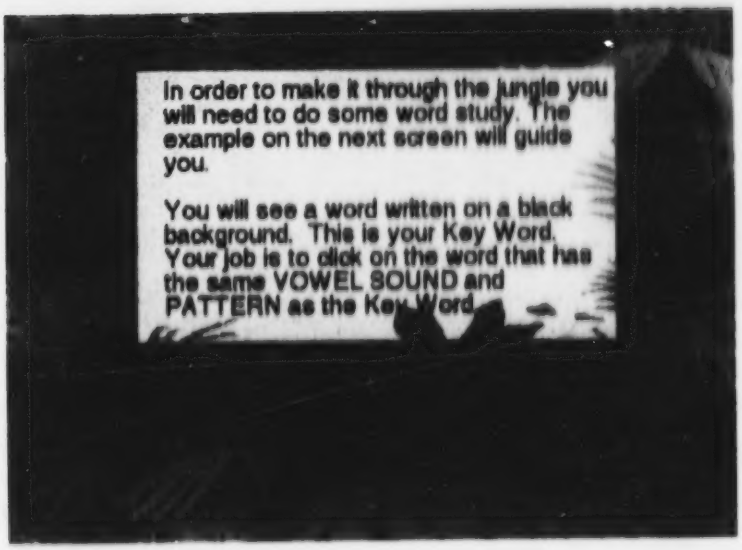
chameleon 36B003 or 36A005

25 col bamboo background
up monkey 42L007

danger danger!

26

Attachment B
Sample Cards


In order to make it through the jungle you will need to do some word study. The example on the next screen will guide you.
You will see a word written on a black background. This is your Key Word. Your job is to click on the word that has the same VOWEL SOUND and PATTERN as the Key Word.

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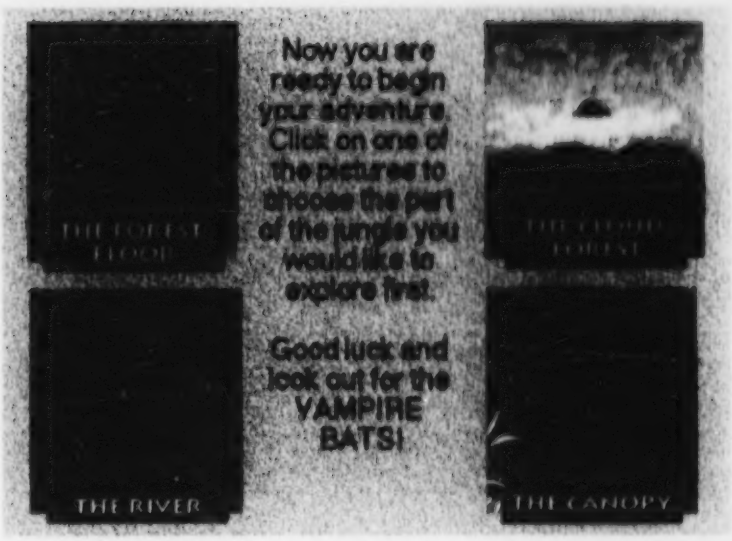
THE FOREST FLOOR
THE RIVER
Now you are ready to begin your adventure. Click on one of the pictures to choose the part of the jungle you would like to explore first.
Good luck and look out for the VAMPIRE BATS!
THE CANOPY

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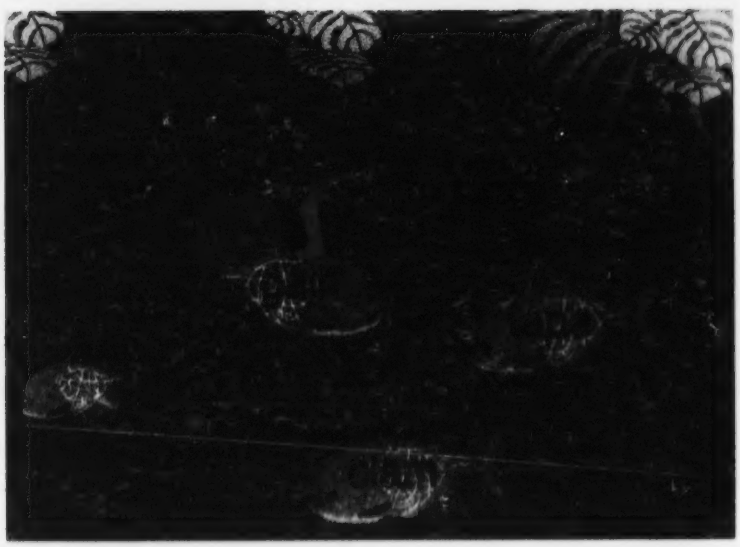
BEST COPY AVAILABLE



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Attachment C
CD of Jungle Quest

Attachment D
Survey

JUNGLE QUEST SURVEY

What do you think about Jungle Quest?
Use the numbers to answer the questions.

1 = Yes 2 = I don't know 3 = No

___ Jungle Quest was fun to play.

___ I felt confused by the Jungle Quest word study.

___ The words used in Jungle Quest were too hard for me.

___ I would like to play more Jungle Quest games.

___ I like word sorts better than Jungle Quest.

___ I could read the words used in Jungle Quest.

___ Jungle Quest made sense to me.

___ Jungle Quest was boring.

___ There were words used in Jungle Quest that I didn't understand.

___ I would like to do Jungle Quest as part of my word study instruction.